

# SERVICE MANUAL

MY14 (AND PREVIOUS)

**HYBRID**   
CYCLING TECHNOLOGY

 GIANT®





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LATEST UPDATE: 19-02-2014

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## 1. INTRODUCTION

This manual is about Giant hybrid bikes. Along with explaining the parts, problem solving is being handled. Specific tools are pointed out along with their Giant part codes. In case of an update, this will be mentioned.



### RIDE CONTROL

Step 1: Select the power mode and you're ready to ride. Monitor riding information from the screen and adjust the tempo. Giant designed all its controls so that you can operate them with your hands firmly on the grip. This gives you safe and intuitive control to your bicycle.

### PEDALPLUS

Step 2: The Pedalplus sensor system precisely registers the amount of force you're putting into the pedals and your moving speed. This information is sent directly to the I<sup>2</sup> driver unit. Giant combines 4 sensors: human torque, motor speed, cadence and bicycle speed.

### I<sup>2</sup> DRIVER

Step 3: The I<sup>2</sup> driver unit receives the information from the PedalPlus sensors. Via its proprietary software, it is able to send a smoothed-out power curve demand to the EnergyPak power source. Accurate computing allows to maintain an ideal cadence, and makes power consumption more efficient.

### ENERGYPAK

Step 4: The high-capacity Lithium-ion battery pack produces more power and a longer riding range. The EnergyPak communicates with the I<sup>2</sup> driver to deliver just the right amount of power to the SyncDrive motor.

### SYNC DRIVE

Step 5: Thanks to Giants proprietary Sine Wave software and integrated motor sensors, Giant offers you a smooth and quietly on your ride. Because of the wide range of motors, you can choose the most suitable version.

## 2. UPDATES

In case of an update of this manual, you will receive pages to replace the expired ones in this manual. An overview will be visible down here. This way, this manual will always be up-to-date. Be sure to always remove old pages.

**LATEST UPDATE: 19-02-2014**

Up Dates	chapters
19-02-2014	HPB service manual (release date)

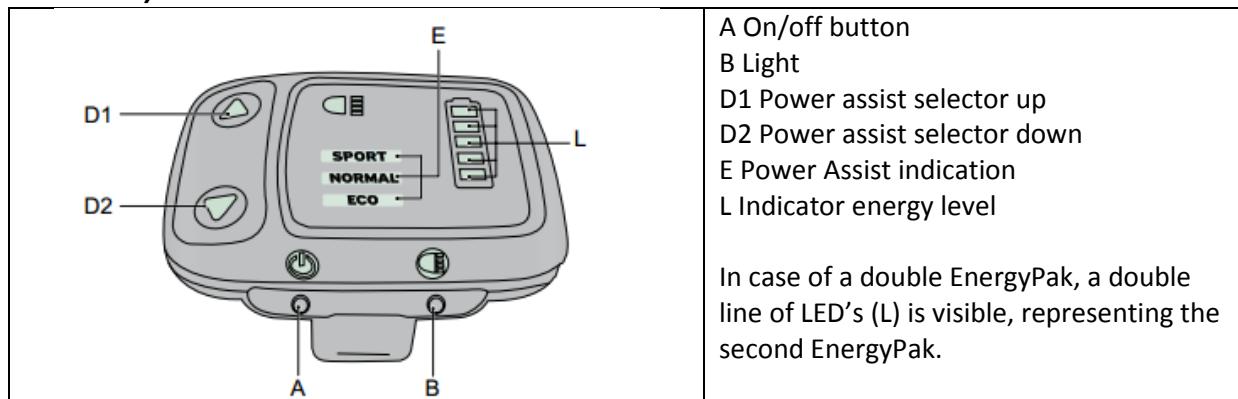


### 3. RIDE CONTROL

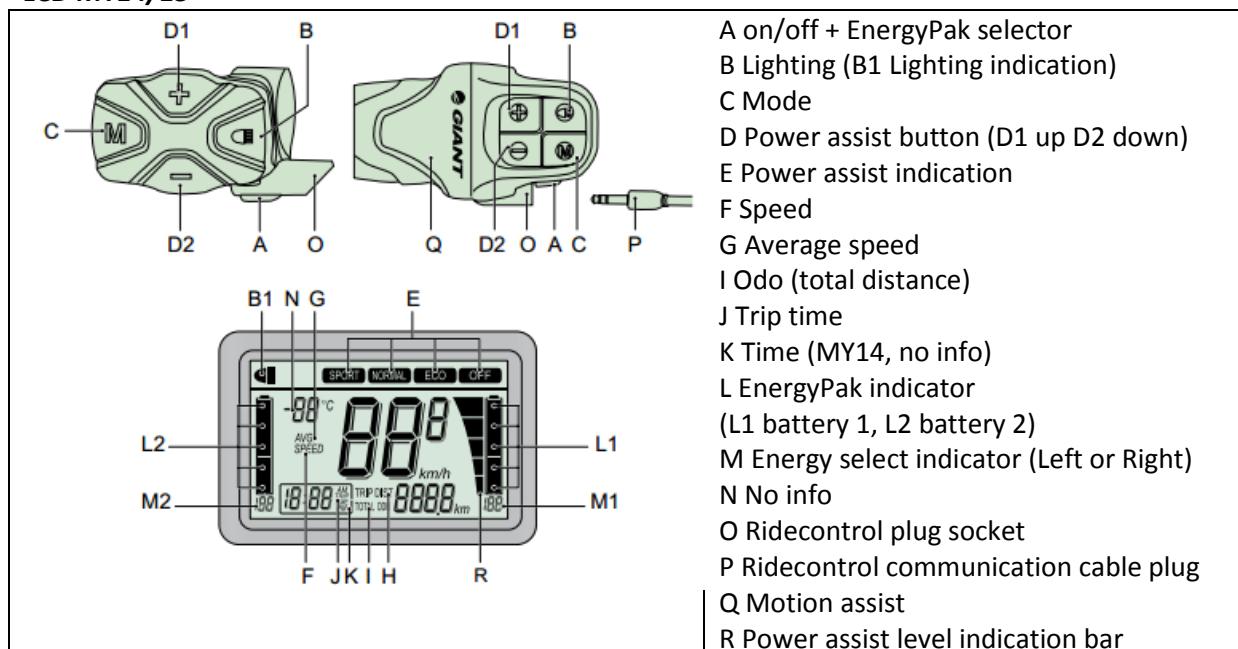
The Ride Control is the interface between user and driver. With these display and buttons, functions can be selected and information can be shown.

#### 3.1 DISPLAY AND CONTROLLERS

##### LED MY14/13



##### LCD MY14/13



## LCD MY10/12

	<table border="0"> <tr> <td>A On/off +EnergyPak selector</td></tr> <tr> <td>B Lighting</td></tr> <tr> <td>C Mode</td></tr> <tr> <td>D Power assist button</td></tr> <tr> <td>E Power assist indication</td></tr> <tr> <td>F Speed</td></tr> <tr> <td>G Average speed</td></tr> <tr> <td>H Trip distance</td></tr> <tr> <td>I Total distance</td></tr> <tr> <td>J Trip time</td></tr> <tr> <td>K Time</td></tr> <tr> <td>L EnergyPak charge indicator</td></tr> <tr> <td>M EnergyPak select indicator (left/right)</td></tr> </table>	A On/off +EnergyPak selector	B Lighting	C Mode	D Power assist button	E Power assist indication	F Speed	G Average speed	H Trip distance	I Total distance	J Trip time	K Time	L EnergyPak charge indicator	M EnergyPak select indicator (left/right)
A On/off +EnergyPak selector														
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G Average speed														
H Trip distance														
I Total distance														
J Trip time														
K Time														
L EnergyPak charge indicator														
M EnergyPak select indicator (left/right)														

## 3.2 DISPLAY IN WORKING ORDER

When you see no figures displayed on the Ride Control;

**Step 1:** Make sure the battery is charged, and not in an idle state.

**Step 2:** Make sure the display is connected correctly and the bike is switched on.

**Step 3:** Check the connections between RideControl bracket and buttons. Sometimes the connector is not connected firmly.

**Step 4:** Check the contact points on the RideControl bracket. They sometimes are crooked by misuse. (MY13 and older)

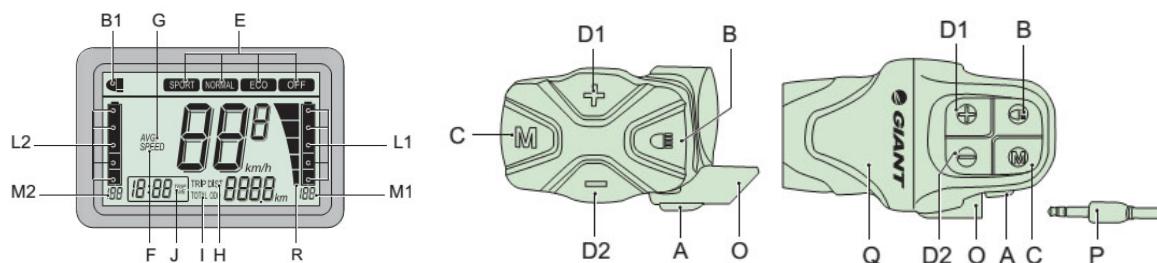
**Step 5:** Check the connections between the driver and RideControl.

Do not use contact spray. A degreaser-spray is advised.

**Step 6:** If previous steps are OK, replace RideControl display.

**Step 7:** If RideControl display still does not switch on, replace the driver.

## 3.3 SET RIDECONTROL



### Display settings:

Press button (C) to select the following display; Speed, trip distance / Average speed, ODO (total distance) & trip time.

### Power assist setting

Press button (D1) to choose a higher Power assist level (E).

Press button (D2) to choose a lower Power assist level (E).

**SPORT:** High power assist. Gives the smallest range

**NORMAL:** Normal power assist.

**ECO:** Low power assist. Gives the maximum range.

**OFF:** For riding without power assist but with cycle computer and light functions.

*Time setting (not available for MY14)*

**Step 1:** Press 'light' (B) until minutes (J) start blinking.

**Step 2:** Adjust with + and - (D1 +D2).

**Step 3:** Confirm with mode (C) and pass on to hours.

**Step 4:** Repeat steps 2 and 3 for hours and date.

**Step 5:** Confirm all by pressing 'light' (B) until all stops blinking.

The maximum of ODO distance shown is 9999km. Please reset ODO when this distance has been reached.

### 3.4 RESET RIDE CONTROL

#### MY14

*Reset trip data:*

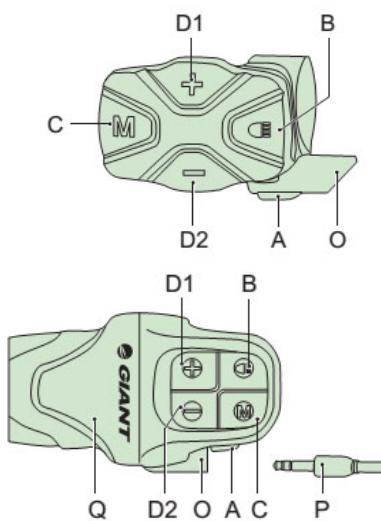
To reset the values of trip distance, trip time and average speed;

**Press** and hold the 'M' button (C) for 5 seconds.

*Reset all data:*

To reset the values of all trip data, including ODD;

**Press** and hold the '-' and '+' buttons (D1+D2) simultaneously for 5 seconds.



#### MY13

*Reset trip data:*

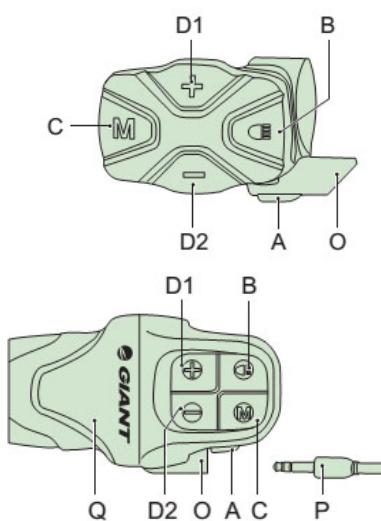
To reset the values of trip distance, trip time and average speed;

**Press** and hold the '+' button (D1) for 5 seconds.

*Reset all data:*

To reset the values of all trip data, including ODD;

**Press** and hold the '-' button (D2) for 5 seconds.



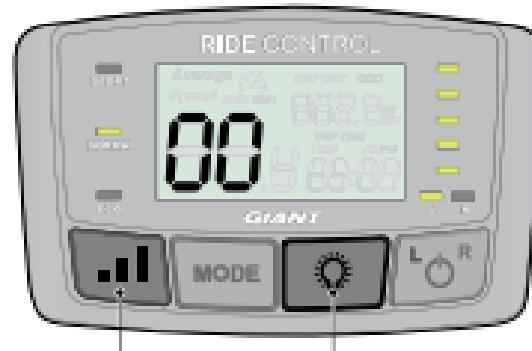
### MY10/12

#### 20V series (mentioned on backside)

**Step 1:** Press 'level' and 'light' buttons simultaneously, until '00' is blinking in the display.

**Step 2:** To reset trip time, press 'level' button once, and 'light' button twice.

**Step 2a:** To do a complete reset, press 'level' button twice, and 'light' button twice.



#### 30V series (mentioned on backside)

To reset the display, press 'mode' until values switch to zero.



### 3.5 SELF-TEST MODUS

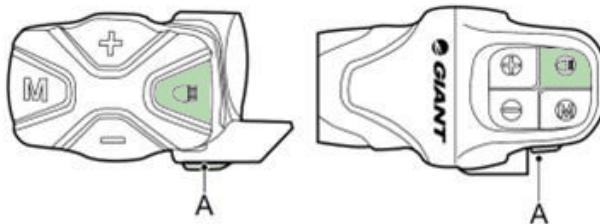
In self-test modus, several key components of the bike can be tested.

For example the motor, torque sensor and speed sensor etcetera. See Chapter 3.6 for error diagnostics.

Note: make sure that the bike is turned off. Otherwise it is not possible to get in self-test mode.

### MY14/13

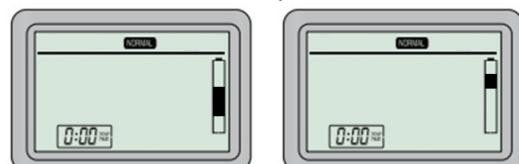
**Step 1:** Press the 'light' button and then the 'on/off' (A) button for a few seconds.

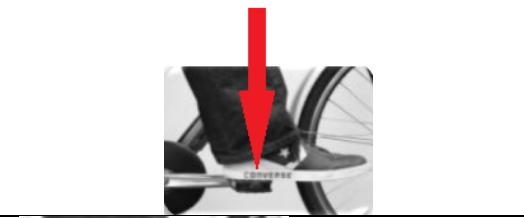


**Step 2:** One or two of indicators 2, 3 and 4 will light up, being the motor sensor. You are in test modus.

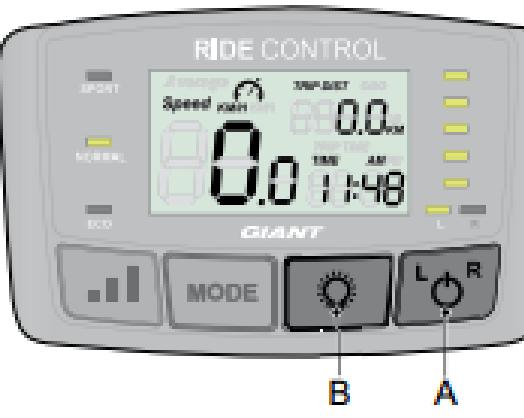
Now test the various components;

Examples

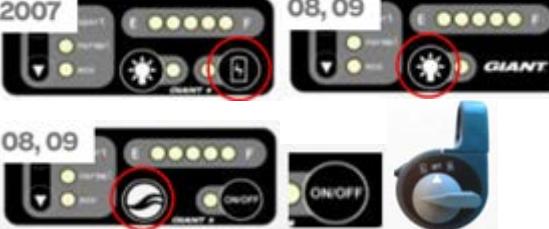


<p><b>Step 3:</b> Speed sensor: Rotate rear wheel forwards. Check if indicator 1 blinks when the magnet passes the speed sensor. (only when rear speed sensor is used)</p>	
<p><b>Step 4:</b> Motor sensor: Rotate the wheel backwards. Check if indicators 2, 3 and 4 light up alternately. (applies to hub motors)</p>	
<p><b>Step 5:</b> Torque sensor: Block the rear wheel. Press the pedal with increasing force. Indicators 1,2,3,4,5 should light up according to the exercised force. (applies to all motors)</p>	
<p><b>Step 6:</b> Cadence sensor: Rotate the cranks forwards. Indicator 5 should blink. (applies only to bikes with cadence sensor)</p>	
<p><b>Step 7:</b> To leave self-test modus press the 'on/off' (A) button until the display turns off.</p>	

#### MY10/12

<p>Press the 'on/off' (A) button and the 'light' button(B) simultaneously for 5 seconds.  To leave the test modus press the 'on/off' (A) button.</p>	
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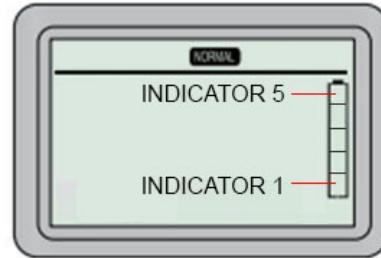
#### OLDER MODELS, MY 2007/2010

<p>Switch on the bike, while holding the circled button for 3 seconds. The bike will go into Self-test mode now.</p>	
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### 3.6 ERROR DIAGNOSTICS

In case of an error, all battery indicators will blink three times. After that, the issue indicating battery indicators will continue blinking while all other battery indicators light up continuously. In this chapter it's clarified what's the cause and what's the solution.

Be clear in the communication towards your client and Giant; the bottom battery indicator is number 1, the top battery indicator is number 5.



If there are any problems with a MY13 display, be sure to work with the updated version of display, RideControl bracket and buttons. The updated version has a green 'G', marked on the back of the display, RideControl bracket and buttons. When you work with a non-updated version, contact your local Giant service dealer for a replacement.

#### **Quick summary:**

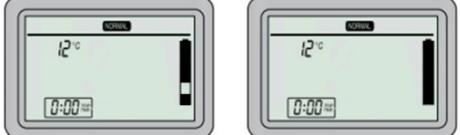
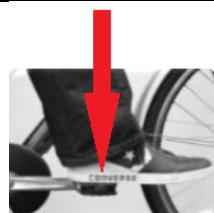
Number	Cause	Solution
# 5	EnergyPak signal problem	<ul style="list-style-type: none"> <li>* If connections are not ok, replace cable or connections.</li> <li>* If connections are ok, replace battery connector (male side).</li> <li>* If indicators still blink, replace driver.</li> </ul>
# 4	Motor signal error	<ul style="list-style-type: none"> <li>* If indicators light up alternately, replace driver.</li> <li>* If indicators do not light up alternately, replace motor.</li> </ul>
# 3	A: Speed sensor malfunction  B: Cadence sensor malfunction	<ul style="list-style-type: none"> <li>* Adjust sensor magnet position.</li> </ul> <p>Replace cadence sensor.</p>
# 2	Torque sensor signal error	<ul style="list-style-type: none"> <li>Reset power</li> <li>Replace torque sensor</li> </ul>
# 1	The EnergyPak is completely empty	Charge EnergyPak

#### **Comprehensive explanation**

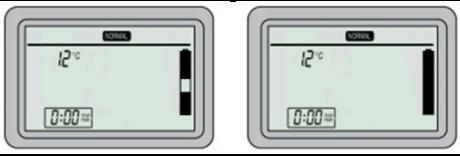
##### **Indicator #1**

Cause: Battery current is low.	 
<b>Step 1:</b> Check the remaining energy level in the EnergyPak. See chapter 6.1 for help.	
<b>Step 2:</b> When level is low, charge battery.	

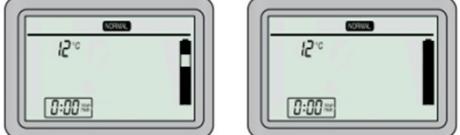
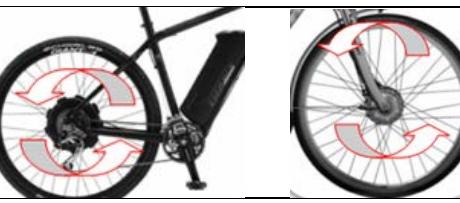
**Indicator #2**

Cause: Torque sensor signal error	
<b>Step 1:</b> Access self-test mode (chapter3.5). <b>Step 2:</b> Block the rear wheel. Press the pedal firm and continuously. #1,2,3,4,5 should light up proportionally.	
<b>Step 3:</b> Check the connections between torque sensor and driver.	
<b>Step 4:</b> If connections are OK, but # 1/5 do not light up, replace torque sensor. See chapter 4.1 for help.	

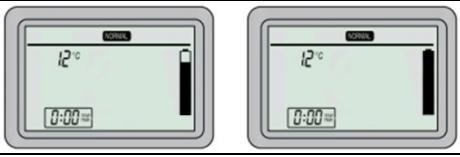
**Indicator #3**

Causes: A: Speed sensor malfunction B: Cadence sensor malfunction, for front and rear motors MY14 and MY13 only.	
<b>Step 1:</b> Access self-test mode (chapter3.5). <b>Step 2a:</b> Rotate rear wheel forwards.	
<b>Step 3a:</b> Check if #1 blinks when the magnet passes the speed sensor.	
<b>Step 4a:</b> If #1 does not blink, adjust speed magnet conform chapter 4.2.	
<b>Step 5a:</b> When #1 still doesn't blink, replace speed sensor.	
Next steps apply to front and rear motors MY14 and MY13 only.	
<b>Step 6b:</b> Rotate crank forwards.	
<b>Step 7b:</b> If indicator 5 does not blink, replace cadence sensor.	

**Indicator #4**

Cause: Motor signal error	
<b>Step 1:</b> Check the cable and connections between motor and driver.	
<b>Step 2:</b> Access self-test mode (chapter3.5).	
<b>Step 3:</b> Rotate the motor wheel backwards.	
<b>Step 4:</b> Check if #2, 3 and 4 light up alternately.	
<b>Step 5:</b> If #2/4 light up alternately, replace driver.	
<b>Step 6:</b> If #2/4 do not light up alternately, replace motor.	

**Indicator #5**

Cause: Battery signal error	
<b>Step 1:</b> Check the connections between EnergyPak and driver.	
<b>Step 2:</b> If head- and rear lights glow, the wires are connected in the wrong way. Energypak and lighting system have the same connectors. Reconnect them the right way.	
<b>Step 3:</b> If connections are ok, replace battery connector (male side).	
<b>Step 4:</b> If #5 still blinks, replace driver.	

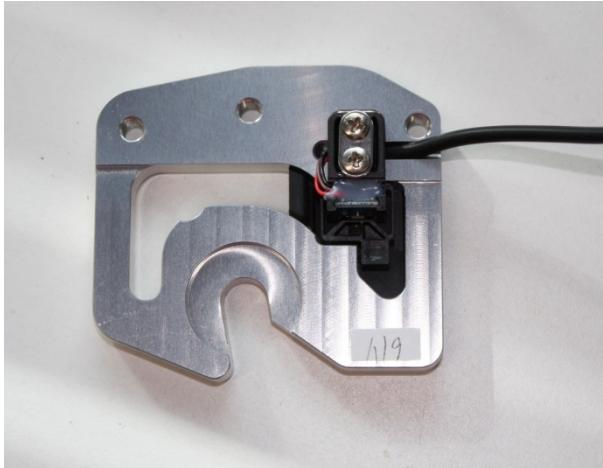
See 'various issues' for further problem solving.



## 4. PEDALPLUS

Giant is using a 4 sensor technology for torque, cadence, motor rotation and speed sensor. These sensors give information to the driver. With this info the driver can decide what support is necessary.

### 4.1 TORQUE SENSOR



The Pedalplus is a 'torque sensor' that generates the signal of power given by the rider. The amount of power assistance from the motor depends partially on how much signal is generated by the torque sensor. Central motor systems have this sensor built in.

If there are problems with inconsistent assistance and insufficient range, it is advised to test the torque sensor.

#### 4.1.1 ZERO VALUE TORQUE SENSOR TEST

To make sure the torque sensor is ok, a test can be done. It can be done with three different tools.

1: The E-lab (*Part# 9500000V*) is a Giant multi-useable device. The value of the measurement has to be between 1V and 2V. If the value is not between the 1,0V and 2,0V replace the complete torque sensor assembly.

The E-lab is a multi-purpose tool for Giant E-bikes. Contact your Giant contact person for further information.



2: Use the pedalplus voltage tester (*Part# 5481-GITS-01V*). The value of the measurement has to be between 1V and 2V. If the value is not between the 1,0V and 2,0V replace the complete torque sensor assembly.



3: You can also use cable assembly (part# 147L-HCtes-01V) between the connection of the torque sensor and the driver. It will only fit one way. The white plug is used for measurement.

Use a multi-meter in DC



setting for this measurement, place the probes of the meter against the contacts of the white plug. The value of the measurement has to be between 1V and 2V.

If the meter gives a minus (-) in front of the numbers you have to switch the red and black probes because this is a polarity warning.

If the value is not between the 1,0V and 2,0V replace the complete torque sensor assembly.

#### 4.1.2 REAR TORQUE SENSOR REPLACEMENT

**Step 1:** If in order, remove the cover of the torque sensor unit and the bolts of the pannier-rack.

**Step 2:** Disconnect the cable of the torque sensor unit completely.

**Step 3:** Release the nut and ring of the rear axle.

**Step 4:** Unscrew the bolts of the torque sensor unit and take the unit out.

Place the new torque sensor unit. Make sure the sensor cable does not get stuck.



**Step 5:** Replace the bolts. Tighten them with a torque wrench [10Nm]. Use the correct sequence, being; center, right, left (1,2,3).



**Step 6:** Replace the axle nut and ring, and tighten them with a torque wrench [40Nm].

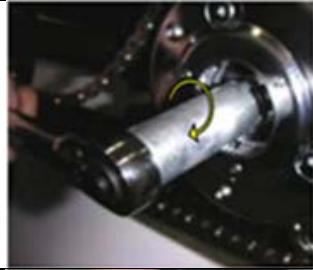
**Step 7:** Realign the cable and do the 'Zero value torque sensor test' as previously described. If the test is ok, replace the covers and rear rack. The bike is ready for use.

#### 4.1.3 CHAIN WHEEL TORQUE SENSOR REPLACEMENT

In older model years (MY07-MY12) bottom bracket torque sensors were used.

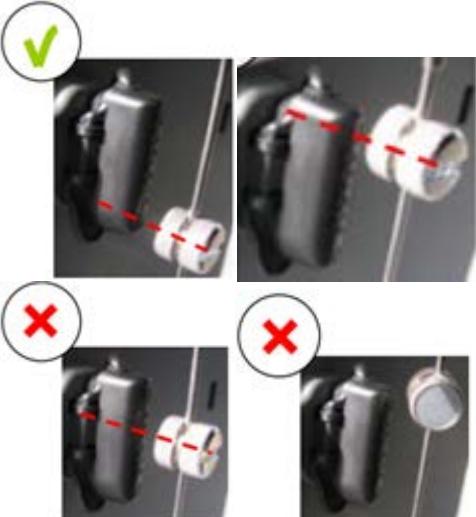
**Step 1:** Remove the crank with a regular extractor. The Pedalplus chain wheel unit stays on the axle.



<b>Step 2:</b> Remove the lock-ring with 4 pin socket (turn clockwise). (part# 2520-FY06-03V)	
<b>Step 3:</b> Remove the chain wheel unit. The torque sensor can be removed by loosening the 3 screws and disconnecting the connector.	
<b>Step 4:</b> Follow the procedure in reversed order (with a new sensor) to reassemble.	

#### 4.2 SPEED SENSOR

As of MY14, front hub motors have an internal speed sensor. In case of an external speed sensor, actions as written below should be followed.

<b>Step 1:</b> For proper function, the center of the magnet must be aligned with one of the ends of the speed sensor(S-Marks) and point in the direction of the sensor. If you listen very close, you can hear the relais 'click' inside the speed sensor. If this doesn't work, try step2.	
<b>Step 2:</b> Switch the multi-meter in $\Omega$ position. Measure at the plug of the speed sensor. Turn the wheel. Every time the magnet passes the sensor, the indication on the multi meter should jump from "OL" to a value. If this doesn't work, try step 3.	 
<b>Step 3:</b> Switch the multi-meter in DC position. Switch on the bike. Measure at the plug of the speed sensor from the driver. The voltage should be approx 5 Volt. If this doesn't work, replace speed sensor.	 

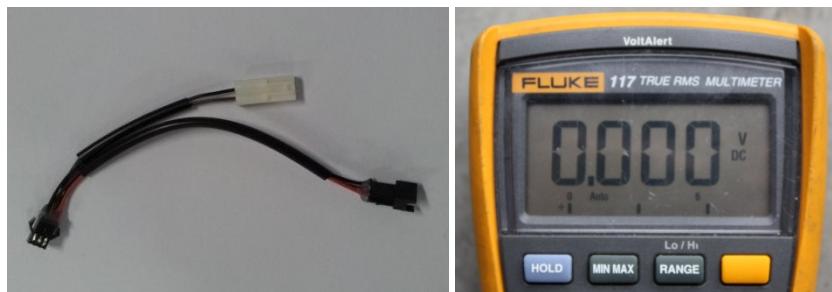
### 4.3 CADENCE SENSOR

As of MY14, a cadence sensor is mounted in all bikes. The response of this sensor smoothens the ride, especially after every stop. This sensor is inside the motor of central Syncdrives (Yamaha and Bosch). In all front and rear Syncdrives, this sensor is mounted (under a cover) at the bottom bracket.

#### MY14/13

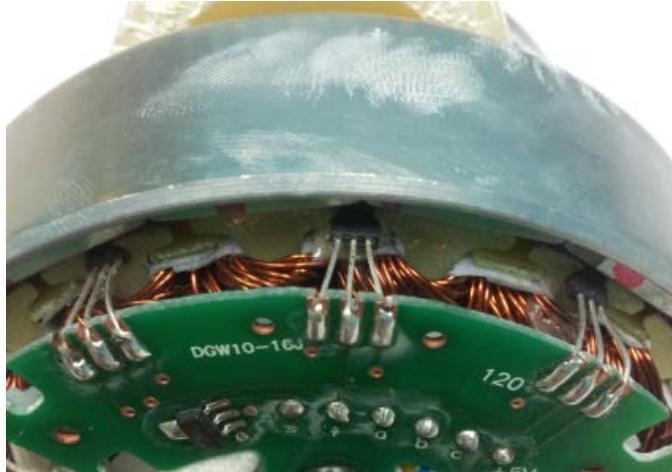
<p><b>Step 1:</b> Remove the cover of the driver.</p>	
<p><b>Step 2:</b> The cadence sensor is mounted on the bottom bracket.</p>	
<p><b>Step 3:</b> Remove the sensor.</p>	
<p><b>Step 4:</b> Follow the procedure in reversed order (with a new sensor) to reassemble.</p>	

To measure the cadence sensor, you can also use cable assembly (part# 147L-HCtes-01V) between the connection of the cadence sensor and the driver. It will only fit one way. The white plug is used for measurement. Use a multi-meter in DC setting for this measurement, place the probes of the meter against the contacts of the white plug. The value of the measurement has to be +/- 5V.



#### 4.4 MOTOR ROTATION SENSOR

Every motor has 3 sensors for rotation detection. The position of the sensors regulates the current that is sent to the coils of the motor to make it run smoothly.



If the speed sensor is malfunctioning, the motor rotation sensor will generate a speed signal until approximately 12 Km/h. This means that despite a malfunctioning speed sensor, a speed indication will still show. Above approximately 12km/h, "OL" will appear in the screen. If only a LED screen is used, LED 4 will blink.

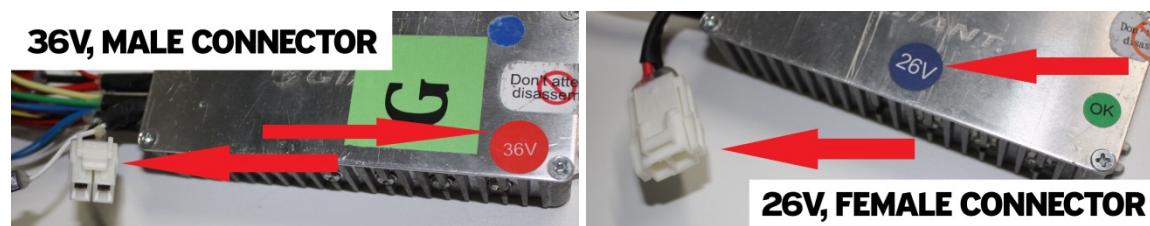


## 5. DRIVER

The driver collects all info and controls the motor. It's 'the brain' of the bike. Driver failures should be solved by the dealer by replacement of the complete driver. Malfunctioning drivers should be returned to your Giant representative. Different sorts of bikes and EnergyPaks use different drivers.

### 5.1 VOLTAGE DIFFERENCE

Different voltage drivers have been used. From MY11 on, 36V drivers have been in use. There is an obvious visual distinction between the 26V and 36V versions, being the connectors and the (color of the) Voltage decal.

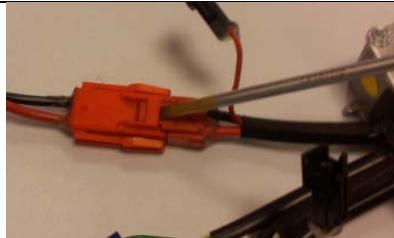
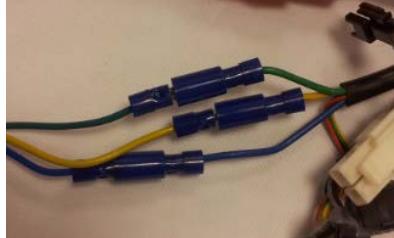
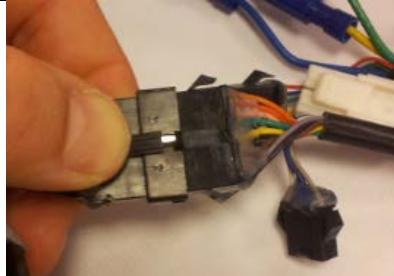


### 5.2 REPLACING DRIVER

When replacing a driver, unplug the EnergyPak first.

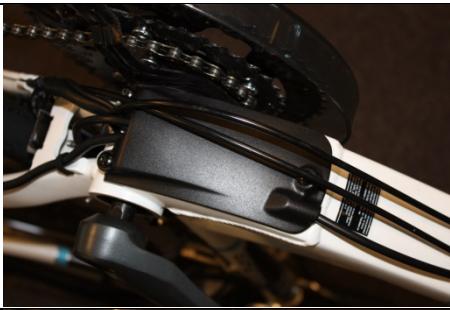
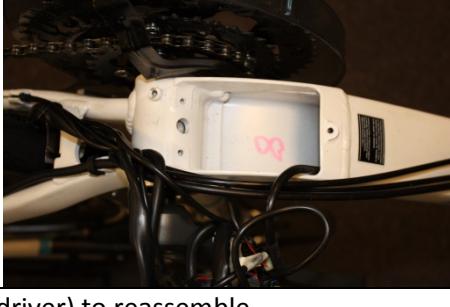
#### Loosening cables of drivers

Note: Do not damage the plug and cable. Never pull the cable directly. Always remove the plugs using your fingers or long nose pliers.

<b>Step 1:</b> Unplug the battery cables first. The connector to the battery has a locking hook. Press it off by a small screwdriver.	
<b>Step 2:</b> Unplug bus connectors. Green and blue cables can be hard to distinguish in dark areas.	
<b>Step 3:</b> Unplug the other cables. The connectors have a locking hook. Unlock this.	
<b>Step 4:</b> Follow the procedure in reversed order (with a new sensor) to reassemble.	

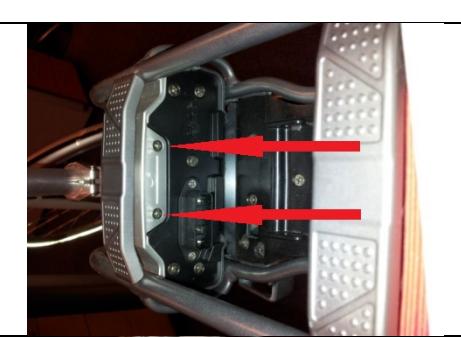
Note: Avoid stressing the connectors when mounting the driver back into the driver compartment.

*MY 14 models with driver in down tube*

<b>Step 1:</b> Loosen the 3 Philips screws.	
<b>Step 2:</b> Remove the cover.	
<b>Step 3:</b> Remove (the screws that fixes) the cadence sensor.	
<b>Step 4:</b> Pull the driver out of the tube. Disconnect all cables.	
<b>Step 5:</b> Follow the procedure in reversed order (with a new driver) to reassemble.	

**MY 13 models with driver in down tube**

<b>Step 1:</b> Loosen the 3 Philips screws.	
---------------------------------------------	--------------------------------------------------------------------------------------

<p><b>Step 2:</b> Remove the cover.</p>	
<p><b>Step 3:</b> Remove the screw that fixes the driver. Pull the driver out of the tube.</p>	
<p><b>Step 4:</b> Follow the procedure in reversed order (with a new driver) to reassemble.</p>	
<p><b>MY 13 models with horizontal EnergyPak</b></p> <p><b>Step 1:</b> Loosen the two hex bolts.</p>	
<p><b>Step 2:</b> Slide the cover backwards in between pannier rack and driver housing.</p>	
<p><b>Step 3:</b> Loosen the screws of the driver.</p>	
<p><b>Step 4:</b> Follow the procedure in reversed order (with a new sensor) to reassemble.</p>	

**MY10 and later models with vertical EnergyPaks**

<p><b>Step 1:</b> Loosen the two hex bolts.</p>	
<p><b>Step 2:</b> Pull the cover up and pull off forward. Loosen the screws to release the driver.</p>	
<p><b>Step 3:</b> Follow the procedure in reversed order (with a new sensor) to reassemble.</p>	

**Older models (MY 07 - MY10)**

<p><b>Step 1:</b> Loosen the three screws.</p>	
<p><b>Step 2:</b> Remove the cover.</p>	
<p><b>Step 3:</b> Loosen the screws to release the driver.</p>	
<p><b>Step 4:</b> Follow the procedure in reversed order (with a new sensor) to reassemble.</p>	



## 6. ENERGYPAK

Giant hybrid powered bikes use various Energypaks. They vary in voltage, capacity and shape. The type of Energypak can always be found on the Energypak itself, usually on the backside.

### 6.1 TEST FUNCTION ON ENERGYPAK

The 36V EnergyPaks are equipped with an internal test function.

If you push the “push “button on the EnergyPak/battery pack for a few seconds, it will show the remaining amount of energy left in the battery pack.

If you encounter issues with charging an EnergyPak, check all connectors on both EnergyPak and charger.



## 6.2 CAPACITY TESTER



### 6.2.1 GUIDANCE

The capacity tester is used to determine the discharge time of the EnergyPak.

**Important:** This measurement is only reliable when started with a fully charged EnergyPak.

#### Usage

<b>Step 1:</b> Use the correct position of the 'Volts' indicator (depending on the type of battery).	
<b>Step 2:</b> Connect a <b>fully charged</b> EnergyPak to the tester (check polarity).	
<b>Step 3:</b> Switch on the tester (at the back of the machine). The display indicates the voltage of the battery. The 'voltage' LED lights up. for a 36V battery the ideal voltage is 41,5 V +/-0.2V for a 26V battery the ideal voltage is 29,5V +/-0.2V	
<b>Step 4:</b> Press one of the yellow buttons until 'time' LED lights up. (during testing, you can switch at any time between Voltage, Current and Time).	
<b>Step 5:</b> Now press the green start button. The tester will start with the discharge of the battery. The 'discharge' LED lights up.	
<b>Step 6:</b> The 'finish' LED will light up when the test is completed. Compare this value with the correct table on the next page.	

### 6.2.2 DISCHARGE TIME TABLE

If the discharge is below given values for given time and temperature, contact your Giant representative for possible warranty claim (regarding the applicable conditions for warranty).

#### 36V EnergyPak discharge time (LI-ION 10AH)

Ambient temperature	Indication for discharge time in minutes				
	New battery	0/6 Months	7/12 months	13/18 months	19/24 months
35°C +/- 5°C	113	110	101	90	79
25°C +/- 5°C	113	110	101	90	79
15°C +/- 5°C	106	105	96	86	75
5°C +/- 5°C	101	99	90	80	71
-5°C +/- 5°C	95	94	86	76	68
Below -10°C	Use and discharge of the battery is not recommended				

#### 36V EnergyPak discharge time (LI-ION 8AH)

Ambient temperature	Indication for discharge time in minutes				
	New battery	0/6 Months	7/12 months	13/18 months	19/24 months
35°C +/- 5°C	90	85	75	65	60
25°C +/- 5°C	90	85	75	65	60
15°C +/- 5°C	85	85	75	65	60
5°C +/- 5°C	80	80	65	60	55
-5°C +/- 5°C	75	75	60	55	50
Below -10°C	Use and discharge of the battery is not recommended				

#### 26V EnergyPak discharge time (LI-ION)

Ambient temperature	Indication for discharge time in minutes				
	New battery	0/6 Months	7/12 months	13/18 months	19/24 months
35°C +/- 5°C	75	75	65	55	50
25°C +/- 5°C	75	75	65	55	50
15°C +/- 5°C	75	75	65	55	50
5°C +/- 5°C	65	65	60	50	45
-5°C +/- 5°C	60	60	55	45	40
Below -10°C	Use and discharge of the battery is not recommended				

#### 24V EnergyPak discharge time (NiMh)

Ambient temperature	Indication for discharge time in minutes				
	New battery	0/6 Months	7/12 months	13/18 months	19/24 months
35°C +/- 5°C	55	55	50	40	35
25°C +/- 5°C	55	55	50	40	35
15°C +/- 5°C	55	55	50	40	35
5°C +/- 5°C	50	50	40	35	30
-5°C +/- 5°C	45	45	40	35	30
Below -10°C	Use and discharge of the battery is not recommended				



## 7. SYNC DRIVE

Be sure to detach the EnergyPak while working on a Syncdrive.

### 7.1 SYNC DRIVE FRONT MOTOR REPLACEMENT



This motor can only be serviced by the manufacturer or its authorized service center.

Contact your Giant representative or service center, to determine whether the motor should be returned for service, or shall be replaced completely.

<p><b>Step 1:</b> Loosen the 3 screws from the cover. Disconnect the motor cable (and brake wires).</p>	
<p><b>Step 2:</b> Loosen the nuts from the axle and the fender.</p>	
<p><b>Step 3:</b> Take out the wheel and motor.</p>	
<p><b>Step 4:</b> Follow the procedure in reversed order to reassemble. Make sure the anti-rotation plate is correctly placed in the right side drop-out. Tighten the axle nuts at 40 Nm.</p>	

## 7.2 YAMAHA MOTOR REPLACEMENT



This motor can only be serviced by the manufacturer or its authorized service center. Contact your Giant representative or service center, to determine whether the motor should be returned for service, or shall be replaced completely.

<b>Step 1:</b> Remove the cover and the crank bolt. Both cranks can be removed with a regular pulley.		
<b>Step 2:</b> Remove the big nut at the chain ringside. Beware; opens clockwise. Blocking the rear wheel can be useful. The chain ring can be taken off the axle together with the chain now. Remove the motor covers now.		
<b>Step 3:</b> Untighten the three frame bolts. The rear bolt should remain in the frame. The two front bolts can be removed. The motor now can twist, but will not fall out.		
<b>Step 4:</b> Disconnect all the wires and take out the motor.		
<b>Step 5:</b> Follow the procedure in reversed order to reassemble. The frame bolts should be tightened with 40Nm. The big nut for the chain ring tightens with 40Nm.		

## 7.3 BOSCH MOTOR REPLACEMENT



This motor can only be serviced by the manufacturer or its authorized service center. Motor failures should be solved by the dealer by replacement of the complete motor unit. Malfunctioning motors should be returned to a Bosch authorized Service Center.

### *Removing the chain wheel*

**Step 1:** Remove the crank arms(alien key size 8 ISIS crank puller)

**Step 2:** Block the rear wheel

**Step 3:** Unscrew the lock ring(2) with the spider tool (1) Be aware left hand thread !

**Step 4:** Remove the chain

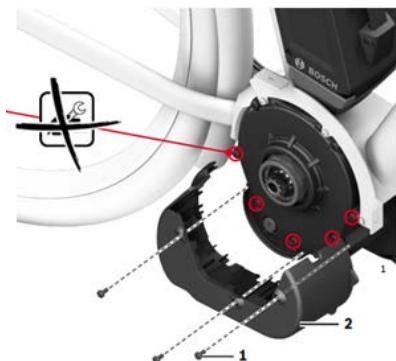
**Step 5:** Remove the chain wheel crank(spider3) together with the chain wheel(take the chain wheel with both hands and pull it out by moving back and forth.Prise off the spider with a long lever from the housing. DO NOT use a hammer, the torque sensor can be destroyed).



### *Removing the stone chip protection*

**Step 1:** Remove 3 screws (1)(Torx T20). (Ensure that you do not inadvertently remove the screws of the motor casing).

**Step 2:** Pull the stone chip protection (2) forwards.



*Disconnecting the cable connections on the drive unit.*

**Step 1:** Unplug all cables (the connector to the battery has a locking hook (1). Prize it off by 1-2 mm with a screwdriver. Damage is possible if the locking hook is not disengaged before dismounting.



Do not damage the plug and cable, always remove the plugs using your fingers or long nose pliers. Never pull the cable directly!!



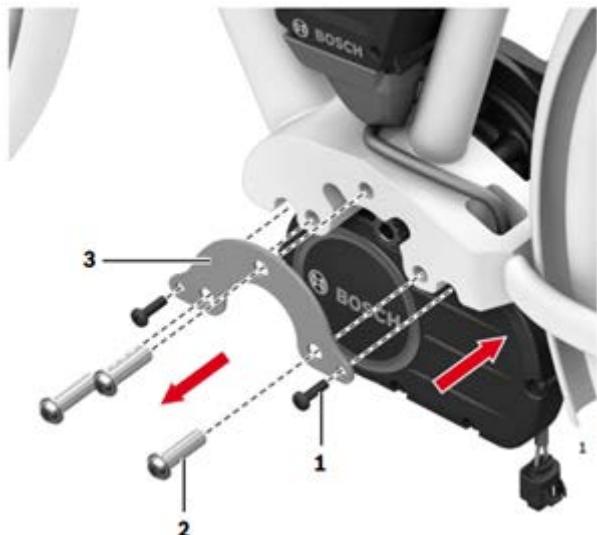
*Remove the drive unit*

**Step 1:** Loosen and remove the fixing screws(1-Torx T30, 2-Torx T40) and mounting plate(3).

**Step 2:** Pull the drive in the direction of motion to the right from the frame.

**Step 3:** Dispose of the 3 expansion sleeves (2)(The expansion sleeves cannot be reused, new expansion sleeves are supplied with each new motor.

**Step 4:** Retain all the rest of the components!



*Installing the drive unit*

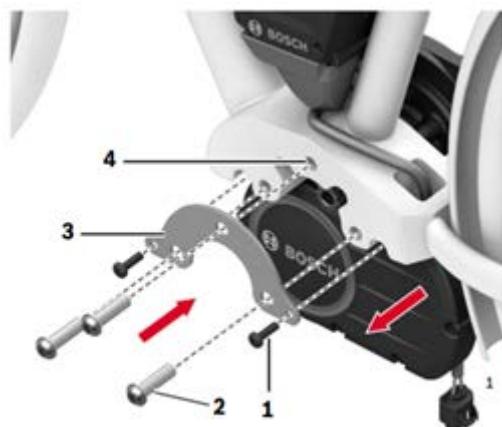
**Step 1:** Lightly grease the attachment points on the bicycle frame (the threads of the stub bolts (4 not visible in the drawing) must be kept free of grease).

**Step 2:** Install the motor on the right of the frame in the direction of motion.

**Step 3:** Insert the fixing screws: First all the M6 screws (1) then screw on the expansion sleeves (2) together with the mounting plate (3). (Always use new expansion sleeves and install them free of grease!)

**Step 4:** Tighten the M6 bolts (1) first. Use a torque wrench and tighten them with 8-10 Nm.

**Step 5:** Tighten the expansion sleeves (2). Use a torque wrench and tighten them with 25-30 Nm.



For further details regarding the Bosch system use the Bosch training.

## 7.4 SYNC DRIVE REAR MOTOR REPLACEMENT

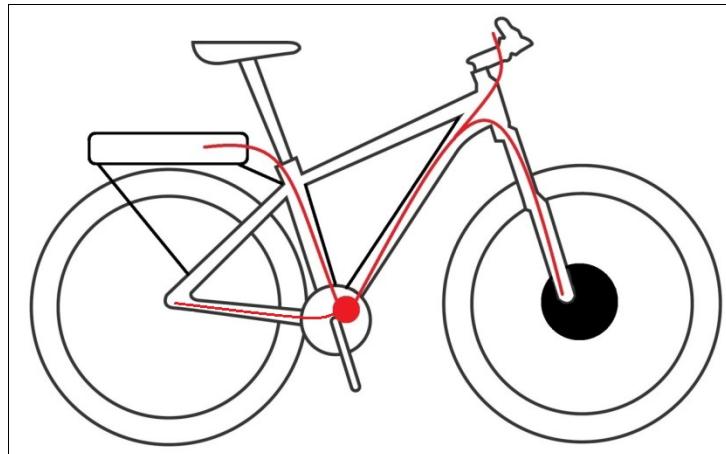


This motor can only be serviced by the manufacturer or its authorized service center. Contact your Giant representative or service center, to determine whether the motor should be returned for service, or shall be replaced completely.

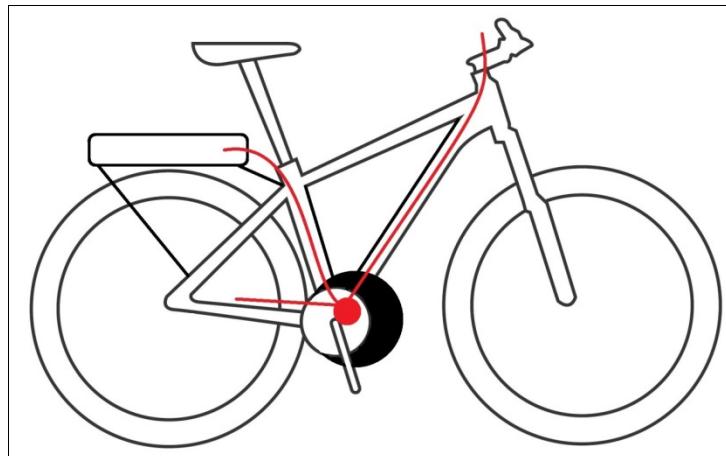
<p><b>Step 1:</b> Disconnect the motor cable.</p>	
<p><b>Step 2:</b> Loosen the axle nuts or quick-release.</p>	
<p><b>Step 3:</b> Remove the rear wheel.</p>	
<p><b>Step 4:</b> Follow the procedure in reversed order to remount the Syncdrive. Make sure the anti-rotation plate is correctly placed. Make sure the wire outlet faces downwards. Tighten the axle nuts at 40 Nm.</p>	

## 8. WIRING SCHEMES

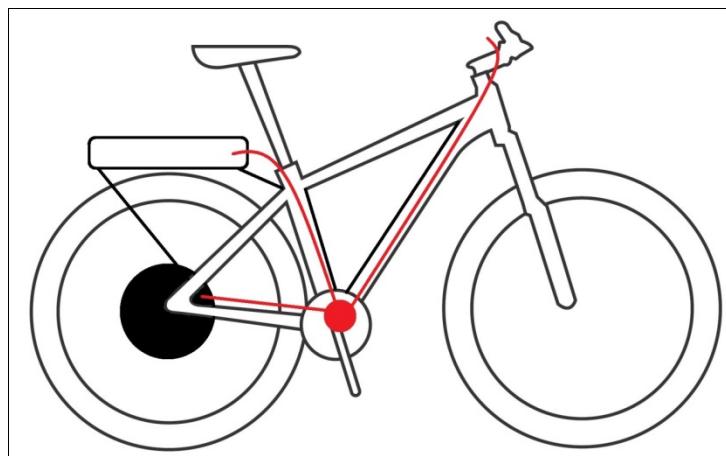
### FRONT SYNC DRIVE



### CENTRAL SYNC DRIVE

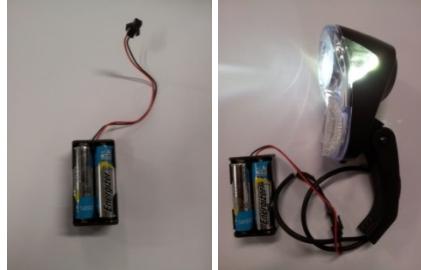


### REAR SYNC DRIVE



## 9. VARIOUS ISSUES

### 9.1 LIGHTS

<p><b>Step 1:</b> Check for faulty connectors on the lightning wiring.</p> <p><b>Step 2:</b> Check with the special tool (<i>part#2520-SY06-13V</i>) if the front or tail light is OK. The tool can be connected to the lights directly. Make sure the (AA) batteries are full.</p>	
<p><b>Step 3:</b> Replace the light if not functioning. If the light is working correctly with the battery set attached, reconnect the lights to the system to see if the problem is solved. If not, follow the next steps.</p>	
<p><b>Step 4:</b> Switch on the bike, then switch on the lights. The backlight of the RideControl should switch on. If the backlight does not function, replace the RideControl display.</p>	
<p><b>Step 5:</b> Use the multi-meter in DC mode. If the voltage on the light plugs near the headlight is not approximately 6V, check at the driver directly.</p>	
<p><b>Step 6:</b> Use the multi-meter in DC mode. If the voltage on the light plugs near driver is approximately 6V, replace the cable assembly.</p>	

## 9.2 CHAIN TENSIONER

Front wheel hub motored bikes are equipped with a chain tensioner. If mounted, the derailleur is being used as such. Otherwise, a separate chain tensioner is mounted. Its running smooth is of big influence on the Pedalplus sensor, and therefore on the range and performance of the bike. To check;

<b>Step 1:</b> Remove the chain covers.		
<b>Step 2:</b> Check the position and direction of the chain tensioner. The chain has to run straight and clear on both sides of the flanks. If it's faulty, continue the steps.		
<b>Step 3:</b> The chain tensioner can be slid sideways to get in line with the chain. To do this the Allen bolts have to be loosened.		
<b>Step 4:</b> Now the horizontal axle from the chain tensioner can be aligned.		
<b>Step 5:</b> By moving the chain, it can be determined which way the chain tensioner should slide.		
<b>Step 6:</b> With some pliers the wheel can be adjusted to make it run parallel with the chain.		

<b>Step 7:</b> When the chain runs smooth, clear and straight, the Allen bolt can be secured.		
<b>Step 8:</b> Check the chain tensioner. It should effectively tension the chain.		
<b>Step 9:</b> Replace the covers.		

## 10. TOOLS, GIANT SPECIFIC



*Gits voltage tester*  
(Part# 5481-GITS-01V)



*Pedalplus voltage tester*  
(Part# 147L-HCTEST-01V)



*E-lab*  
(Part# 95200000V)



*Capacity tester*  
(Part# 5481-test-06V)



*Light tester*  
(Part# 2520-sy06-13V)



*4pin socket for central Syncdrive MY07/MY12*  
(part# 2520-FY06-03V)

## 11. CONTACT

### GATHERING INFORMATION

If this manual doesn't help out, you can contact your Giant service manager.

Make sure to have at hand;

- Energypak charged completely
- A clear explanation of the customer's complaint
- Frame number
- Model and version of the bike
- Any measurement data
- List of actions taken / parts replaced
- Other relevant data